

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Sudhakar Bobba et al.

Art Unit: 2822

Serial No.: 10/033,008

Examiner: D. Graybill

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Title: CURRENT CROWDING REDUCTION
TECHNIQUE USING SLOTS

MS: Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPELLANT'S REPLY BRIEF

Dear Sir:

In response to the Examiner's Answer dated October 29, 2007, to the Appeal Brief filed November 7, 2005, Appellant submits the following.

I. STATUS OF CLAIMS

Claims 1 – 18 were pending in the present application. By way of the Response to the Restriction Requirement of June 29, 2004, claims 15 – 18 were withdrawn from consideration. Accordingly, claims 1 – 14 are currently pending in the present application.

Claims 1 – 14 were rejected in the final Office Action of March 4, 2005. *See* final Office Action of March 4, 2005, Office Action Summary (page 1). Specifically, claims 1 – 14 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,689,139 (hereinafter “Bui”). *See id.* at pages 2 – 3. Claims 1 – 14 were further rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant’s Admitted Prior Art (hereinafter “AAPA”) and Bui. *See id.* at pages 3 – 5.

The rejections of claims 1 – 14 are hereby appealed.

II. GROUNDS OF REJECTION

The grounds of rejection presented for review are as follows:

- 1) whether Bui anticipates claims 1 – 14 under 35 U.S.C. § 102(b); and
- 2) whether Bui and AAPA render claims 1 – 14 unpatentable under 35 U.S.C. § 103(a).

III. SUPPLEMENTAL ARGUMENTS

Appellant submits the following supplemental remarks in response to the Examiner's Answer dated October 29, 2007 (hereinafter "Examiner's Answer").

In the Examiner's Answer, the Examiner asserts that "because appellant has provided no clear definition for the term 'bump' in the specification, the specification cannot be used in interpreting the claim language 'bump,' and the claim language 'bump' is not limited in meaning by what is shown or disclosed in the specification." Then, the Examiner proceeds to reference the Merriam-Webster dictionary definition of "bump" to equate the via-filling plug 53 of Bui to the bump disclosed in the present specification.

Appellant respectfully notes that the MPEP section following the one quoted by the Examiner on pages 7 and 8 of the Examiner's Answer (MPEP 2111.01 [R-3]) continues:

II. "PLAIN MEANING" REFERS TO THE ORDINARY AND CUSTOMARY MEANING GIVEN TO THE TERM BY THOSE OF ORDINARY SKILL IN THE ART

"[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application." *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*). *Sumrace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1302, 67 USPQ2d 1438, 1441 (Fed. Cir. 2003); *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1298 67 USPQ2d 1132, 1136 (Fed. Cir. 2003) ("In the absence of an express intent to impart a novel meaning to the claim terms, the words are presumed to take on the ordinary and customary meanings attributed to them by those of ordinary skill in the art."). It is the use of the words in the context of the written description and customarily by those skilled in the relevant art that accurately reflects both the "ordinary" and the "customary" meaning of the terms in the claims. *Ferguson Beauregard/Logic Controls v. Mega Systems*, 350 F.3d 1327, 1338, 69 USPQ2d 1001, 1009 (Fed. Cir. 2003) (Dictionary definitions were used to determine the ordinary and customary meaning of the words "normal" and "predetermine" to those skilled in the art. In construing claim terms, the general meanings gleaned from reference sources, such as dictionaries, must always be compared against the use of the terms in context, and the intrinsic record must always be consulted to identify which of the different possible dictionary meanings is most consistent with the use of the words by the inventor.); *ACTV, Inc. v. The Walt Disney Company*, 346 F.3d 1082, 1092, 68 USPQ2d 1516, 1524 (Fed. Cir. 2003) (Since there was no definition given for the term "URL" in the specification, the term should be given its broadest reasonable interpretation and take on the ordinary and customary meaning attributed to it by those of ordinary skill in the art; thus, the term "URL" was held to encompass both relative and absolute URLs.); and *E-Pass Technologies, Inc. v. 3Com Corporation*, 343 F.3d 1364, 1368, 67 USPQ2d 1947, 1949 (Fed. Cir. 2003) (Where no explicit definition for the term "electronic multi-function card" was given in the specification, this term should be given its ordinary meaning and broadest reasonable interpretation; the term should not be limited to the industry standard

definition of credit card where there is no suggestion that this definition applies to the electronic multi-function card as claimed, and should not be limited to preferred embodiments in the specification.)

The ordinary and customary meaning of a term may be evidenced by a variety of sources, *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*), including: the claims themselves, *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999); dictionaries and treatises, *Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202, 64 USPQ2d 1812, 1818 (Fed. Cir. 2002); and the written description, the drawings, and the prosecution history, *see, e.g., DeMarini Sports, Inc. v. Worth, Inc.*, 239 F.3d 1314, 1324, 57 USPQ2d 1889, 1894 (Fed. Cir. 2001). If extrinsic reference sources, such as dictionaries, evidence more than one definition for the term, the intrinsic record must be consulted to identify which of the different possible definitions is most consistent with applicant's use of the terms. *Brookhill-Wilk I*, 334 F.3d at 1300, 67 USPQ2d at 1137; *see also Renishaw PLC v. Marposso Societa' per Azioni*, 158 F.3d 1243, 1250, 48 USPQ2d 1117, 1122 (Fed. Cir. 1998) ("Where there are several common meanings for a claim term, the patent disclosure serves to point away from the improper meanings and toward the proper meanings.") and *Vitronics Corp. v. Conceptor Inc.*, 90 F.3d 1576, 1583, 39 USPQ2d 1573, 1577 (Fed. Cir. 1996) (construing the term "solder reflow temperature" to mean "peak reflow temperature" of solder rather than the "liquidus temperature" of solder in order to remain consistent with the specification.)<. If more than one extrinsic definition is consistent with the use of the words in the intrinsic record, the claim terms may be construed to encompass all consistent meanings. *Tex. Digital*, 308 F.3d at 1203, 64 USPQ2d at 1819. *See also Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342, 60 USPQ2d 1851, 1854 (Fed. Cir. 2001) (explaining the court's analytical process for determining the meaning of disputed claim terms); *Toro Co. v. White Consol. Indus., Inc.*, 199 F.3d 1295, 1299, 53 USPQ2d 1065, 1067 (Fed. Cir. 1999) ("[W]ords in patent claims are given their ordinary meaning in the usage of the field of the invention, unless the text of the patent makes clear that a word was used with a special meaning."). Compare *MSM Investments Co. v. Carolwood Corp.*, 259 F.3d 1335, 1339-40, 59 USPQ2d 1856, 1859-60 (Fed. Cir. 2001) (Claims directed to a method of feeding an animal a beneficial amount of methylsulfonylmethane (MSM) to enhance the animal's diet were held anticipated by prior oral administration of MSM to human patients to relieve pain. Although the ordinary meaning of "feeding" is limited to provision of food or nourishment, the broad definition of "food" in the written description warranted finding that the claimed method encompasses the use of MSM for both nutritional and pharmacological purposes.); and *Rapoport v. Dement*, 254 F.3d 1053, 1059-60, 59 USPQ2d 1215, 1219-20 (Fed. Cir. 2001) (Both intrinsic evidence and the plain meaning of the term "method for treatment of sleep apneas" supported construction of the term as being limited to treatment of the underlying sleep apnea disorder itself, and not encompassing treatment of anxiety and other secondary symptoms related to sleep apnea.).

Furthermore, the specification must be reviewed to determine "whether the presumption of ordinary and customary meaning is rebutted." *Tex. Digital*, 308 F.3d at 1204. "The presumption will be overcome where the patentee, acting as his own lexicographer, has set forth a definition for the term different from its ordinary and customary meaning or where the patentee has disavowed or disclaimed scope of coverage, by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *International Rectifier Corp. v. IXYS Corp.*, 361 F.3d 1363, 1368, 70 USPQ2d 1209, 1214 (Fed. Cir. 2004). >In *Astrazeneca AB v. Mutual Pharm. Co.*, 384 F.3d 1333, 1339-40, 72 USPQ2d 1726, 1730-31 (Fed. Cir. 2004), the court found deliberate lexicography in the specification limiting the scope of the claim term "solubilizer" to surfactants because there was a clear disavowal of nonsurfactant solubilizers in the specification. In contrast, the court held in *W.E. Hall Co. v. Atlanta Corrugating LLC*, 370 F.3d 1343, 1350-53, 71 USPQ2d 1135, 1140-42 (Fed. Cir. 2004), that the claim terms "open channels" and "single piece construction" were properly assigned their ordinary and customary meanings because patentee did not act as his own lexicographer and the prosecution history and written description were ambiguous as to whether the terms were used in a manner inconsistent with their ordinary and customary meanings. In *Innova/Pure Water Inc. v. Safari Water Filtration Sys. Inc.*, 381 F.3d 1111, 1117-20, 72 USPQ2d 1001, 1006-08 (Fed. Cir. 2004), the court noted that the disputed claim term "operatively connected" is "a general descriptive claim term frequently used in patent drafting to reflect a functional relationship between claimed components," and that the intrinsic record showed that the patentee did not act as his own lexicographer to redefine "operatively connected" to be limited to only embodiments in which a filter tube and cap were tenaciously physically engaged. In the patent claim at issue, "subject to any clear and unmistakable disavowal of claim scope, the term 'operatively connected' takes the full breath of its ordinary meaning, i.e., 'said tube [is] operatively

connected to said cap' when the tube and cap are arranged in a manner capable of performing the function of filtering." *Id.*

The above section starts by citing *Phillips v. AWH Corp.*, 415 F.3d 1303, 75 USPQ2d 1321 (Fed. Cir. 2005) (*en banc*) (hereinafter "Phillips") "[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to be a person of ordinary skill in the art in question at the time of the invention, *i.e.*, as of the effective filing date of the patent application." (emphasis added). A complete reading of Phillips clearly reveals that this concept is well settled law. See *Innova*, 381 F.3d at 1116 ("A court construing a patent claim seeks to accord a claim the meaning it would have to a person of ordinary skill in the art at the time of the invention."); *Home Diagnostics, Inc. v. LifeScan, Inc.*, 381 F.3d 1352, 1358 (Fed. Cir. 2004) ("customary meaning" refers to the "customary meaning in [the] art field"); *Ferguson Beauregard/Logic Controls v. Mega Sys., LLC*, 350 F.3d 1327, 1338 (Fed. Cir. 2003) (claim terms "are examined through the viewing glass of a person skilled in the art").

Moreover, the court in Phillips also stated that it is of paramount importance that the terms used in a patent specification are interpreted in the context of that specification. See *Medrad, Inc. v. MRI Devices Corp.*, 401 F.3d 1313, 1319 (Fed. Cir. 2005) ("We cannot look at the ordinary meaning of the term . . . in a vacuum. Rather, we must look at the ordinary meaning in the context of the written description and the prosecution history."); *V-Formation, Inc. v. Benetton Group SpA*, 401 F.3d 1307, 1310 (Fed. Cir. 2005) (intrinsic record "usually provides the technological and temporal context to enable the court to ascertain the meaning of the claim to one of ordinary skill in the art at the time of the invention"); *Unitherm Food Sys., Inc. v.*

Swift-Eckrich, Inc., 375 F.3d 1341, 1351 (Fed. Cir. 2004) (proper definition is the “definition that one of ordinary skill in the art could ascertain from the intrinsic evidence in the record”).

And, finally, the Phillips court made clear that while dictionaries may be helpful in determining the meaning of a term, the specification is not subordinate to extrinsic evidence. In fact, it was explicitly pointed out that the court in *Tex. Digital Sys., Inc. v. Telegenix, Inc.*, 308 F.3d 1193, 1202, 64 USPQ2d 1812, 1818 (Fed. Cir. 2002), and the line of cases following that decision, placed too much reliance on extrinsic sources such as dictionaries and treatises. The full *en banc* panel in Phillips said that the “ordinary meaning” of a claim term is what it means to a skilled artisan after reading the patent; dictionaries are prone to divorce such meaning from a claim term.

In view of the above, it is inappropriate for the Examiner to state that without an explicit definition appearing within the present specification that the term “bump” must be interpreted by the dictionary definition contained in Merriam-Webster online. In doing so, the Examiner attempts to wholly separate the term from the meaning that would be recognized for it by one skilled in the art. Appellant respectfully reiterates, as would be clear to one of ordinary skill in the art and as described in the present application, vias connect metal layers within a integrated circuit (*see* vias (50) in Figure 5a of the present application), whereas bumps are conductive deposits on a top metal layer of an integrated circuit (*see* bumps (44) in Figure 5a of the present application) that are used to transmit/receive signals external to the integrated circuit. Accordingly, the element 53 shown in Figure 5 of Bui *is not* a bump.

Further, even assuming arguendo that, “the claim language ‘bump’ recited in the claims has been its plain meaning as a relatively abrupt protuberance on a surface,” as alleged by the Examiner based on the dictionary definition contained in Merriam-Webster online, Bui still fails to show or suggest, “a relatively abrupt protuberance on a surface.” In fact, Bui clearly states that the element 53, which allegedly corresponds to a “bump” required by the claims, is a *plug*, not a bump.

Specifically, Bui discloses, “when employing an aluminum or aluminum alloy metal interconnection line 50, as shown in FIG. 5, it is preferred to employ a tungsten *plug filling the via* 51 through insulating layers 52, or a plug comprising aluminum or aluminum alloy 43 with a barrier layer 54 and/or anti-reflection coating 55.” See Bui, column 7, lines 59-63. In the Examiner’s Answer, the Examiner states that “43” is apparently misidentified, and it should be identified “53” instead of “43.” Also, Figure 5 of Bui explicitly shows that the plug 53 fills the hole 51 between insulating layers 52. Further, according to a dictionary, a “plug” means an object used to *fill or block a hole, tube*, etc. That is, a skilled artisan would recognize that the element 53 is a plug to fill the hole between layers 52.

Therefore, in order for a skilled artisan to construe that a “bump” required by the claims corresponds to the element 53 in the manner proposed by the Examiner, one of ordinary skill in the art would have to completely ignore the express teachings of Bui. Consequently, the Examiner’s proposed interpretation of the claims is clearly not *reasonable*. Indeed, MPEP requires that the Examiner must give the claims of the present application their broadest *reasonable* interpretation. See MPEP § 2111.01.

Moreover, Applicant respectfully asserts that the Examiner's Answer has failed to establish that Bui shows the feature, "a first slot formed in the metal layer between the vias and the bump," required by independent claims 1 and 8.

In order for the Examiner to maintain the rejection under 35 U.S.C. § 102, the identical invention must be shown in as complete detail as contained in the claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Further, "[t]he fact that a certain result or characteristic *may* occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. . . . In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art." *See* MPEP § 2112.

Here, the Examiner merely alleges that Bui shows "a first slot 33 (upper leftmost in Fig. 3, not illustrated in Fig. 5) formed in the metal layer 30/50 between the vias and the bump." Bui does not show that the first slot 33 formed in the metal layer 30/50 between the vias 32A and the element 53. The mere fact that the first slot could be formed in the metal layer between the vias 32A and the element 53 is insufficient to establish that Bui inherently shows the feature, "a first slot formed in the metal layer between the vias and the bump," as required by independent claims 1 and 8. Therefore, the Examiner's Answer has failed to establish that Bui shows or suggests the above feature required by independent claims 1 and 8.

As Bui is completely silent as to a bump, Bui necessarily cannot and does not disclose a metal layer having a slot formed between vias and a bump mounted on the metal layer

as required by independent claims 1 and 8 of the present application. Moreover, even if, *arguendo*, the plug shown on Bui is equated to a bump, Bui still fails to show or suggest at least this limitation of claims 1 and 8. Accordingly, independent claims 1 and 8 are patentable over Bui. Dependent claims 2 – 7 and 9 – 13 are patentable for at least the same reasons.

Also, with regard to the Examiner's characterization of Appellant's arguments about the motivation to combine Bui with Appellant's admitted prior art, Appellant respectfully submits that the arguments set forth in the Appeal Brief dated June 28, 2007, do in fact address the relevant inquiry as to whether there is a *reason, suggestion, or motivation in the prior art that would lead one of ordinary skill in the art to combine the teachings of the references*, and, in the instant case, there is none.

In view of the arguments presented in the Appeal Brief dated November 7, 2005, and these supplementary remarks, Appellant respectfully requests that the Board reverse the Examiner's rejections of claims 1 – 14 under 35 U.S.C. § 103(a). Please apply any charges not covered, or credit any overpayment, to Deposit Account 50-0591, Pin No. 5883 (Reference No. 03226/157001; P6865).

Respectfully submitted,



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